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ABSTRACT

A diagnostic study tested the hypothesis that still advertising pictures and television commercials are governed by a basic visual communication principle: that viewers' comprehension and retention of still and moving images depends greatly on the harmonious coexistence of their figure/ground relationships. Ten still images (half in black and white and half in color) and two television commercials (all with indistinguishable or distorted figure/ground relationships) were shown to 122 college students, who answered multiple-choice questions intended to measure comprehension and retention. No control group was used. Results indicated that the more the figure/ground distinction was blurred, the more viewer comprehension and retention declined. This suggests that the perceptual gimmicks and picture distortions often used by commercial advertisers do not enhance visual communication. (One table of data is included; 21 references and the two questionnaires used in the study are appended.) (SR)

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Figure/Ground Anomalies in Commercial Television:

A Diagnostic Study

by

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Abstract

Studies on visual perception indicate that observer comprehension of visual displays depends greatly on the distinguishable relationships between the figures and their environment--the background. This diagnostic study tests the hypothesis that still and television pictures are governed by the same visual communication principle: viewers' comprehension and retention of still and moving images greatly depends on the harmonious coexistence of their figure/ground relationships. Still and moving images were shown to 122 college students in which the figure/ground relationships were not distinguishable or were distorted. As predicted, the results indicate that the more unclear or not easy to identify the figures were from the background, the less was the degree of viewer comprehension and retention. These preliminary findings suggest that visual communication is not enhanced by perceptual gimmicks and picture distortions which are often used by commercial advertisers in still and moving images.

In the ongoing race to attract the attention of television viewers at any cost, writers, broadcasters, and advertisers have created serious anomalies in the visual communication process. The new computerized television technology, which allows broadcasters to present an incredible number of unconventional and unusual images, has succeeded in drawing viewers' attention by embodying the unexpected and reflecting the unorthodox. Short, fast-paced, compacted visuals, unorthodox backgrounds, unexpected figures, and complex situations are common in commercial television today as the competition for instant viewer attraction gets stiffer. However, skillful manipulation of the various dimensions of visual messages for the sole purpose of attracting the viewer's attention is in total contrast with the theories of communication, visual perception, and picture composition which suggest instead that compatibility and balance of various elements of a message should be used as the means to achieve a meaningful and most effective communication (Baggaley, Ferguson, & Brooks, 1980).

An area of commercial television in which such theories of communication are ignored is the figure/ground relationship. It has been observed repeatedly that advertisers and commercial television producers present still and moving pictures in which the harmonious coexistence of the figure/ground unity has been disrupted. Such disruptions, it is suggested, cause apprehension while attracting the attention of viewers (Cerulo, 1988, p. 98).

Viewer's instant attention and perpetual apprehension due to unorthodox or unexpected visual displays does not guarantee viewer comprehension or

retention of such displays. On the contrary, literature in visual perception and picture composition and visual, ethnographic, and cultural communication seem to suggest that unjustified distortions, abrupt interruptions, or unusual framing of figures in relation to their environment will diminish rather than enhance the degree of viewer understanding and retention.

Nevitt (1982), for example, suggests that "Nothing has any meaning except as a figure in relation to some ground" (p. 56) and stresses the need for the harmonious coexistence of the figures in relation to their backgrounds or contexts, regardless of how swiftly figures change to grounds and grounds become figures. Nevitt (1980) also recognizes that in the information society, which is filled with visible and invisible biases in media, constructors of visual images perpetually interchange, scrutinize, and disrupt the harmonious coexistence of the figure/ground relationships. According to Nevitt (1980), "The figure/ground relation is not fixed, but constantly changes as figures become grounds and vice-versa" (p. 17). These abrupt interchanges which professional communicators imposed upon us, according to Nevitt (1980) "...succeeded in creating an all-embarrassing environment of instant electronic information that is actually decreasing both human tolerance and mutual understanding in any human society" (p. 9).

Gibson (1979, p. 191) and Bloomer (1976, pp. 35-38) contend that ambiguity of the visual elements that constitute the figures as opposed to those which form the grounds present serious perceptual problems which inevitably hinder the normal process of visual communication. Gibson (1979, p. 43) underlines the importance of the environment--the background--as a

contributing factor in understanding the figure in the foreground and emphasizes the role of the ecology in visual perception, a factor which is perpetually violated by advertisers and commercial television producers in their attempt to arouse viewers' apprehension and gain their instant attention.

Underlining the major figure/ground relationships, Bloomer (1976) states that:

> A figure is perceptualy bright, it is seen with more intensity and as standing out of the background... A figure also has the quality of being a thing and or being on top of the background. The ground also has specific characteristics: It seems to be behind the figure, to lack a particular form and to be continuous--that is, you do not perceive it as stopping at the edge of the figure but rather as going on behind the figure. A figure suggests meaning, while a ground seems relatively meaningless (p. 35).

Zettl (1973, pp. 130-133) and Metallinos (1979, pp. 205-214) both recognize the importance of the figure/ground relationship for the effective construction of television images. Outlining this importance, Zettl suggests that "television requires a clarification and intensification of the figure/ground separation rather than a camouflaging of it" (p. 133).

Kipper (1986, pp. 295-307) also stresses the importance of the presence of the environment in picture composition and suggests that the more information television viewers have of the surrounding--the background--the better their understanding, and consequently, their memory of the picture's

content will be.

Sociologists such as Leach (1976) and ethnologists such as Garfinkel (1967) have pointed out that in any communication figure and ground are intimately related and culturally bonded together. Knowledge of the particular culture which produces the picture is a prerequisite for understanding the meaning conveyed in pictures. Once the relationships between the figure and the ground of pictures are socio-culturally defined, they become very important dimensions of the communication process (Garfinkel, 1976, pp. 40-45).

The important issue and the key question of this exploratory study is whether purposeful disruptions and anomalies in the harmonious coexistence of the figure/ground relationship in still pictures and commercial television images will diminish rather than enhance viewer's total comprehension and long-term memory of these visuals. Empirical research in the fields of experimental, perceptual, and cognitive psychology, and in neurophysiology and communication as well, seem to support the notion that confusion rather than understanding and a short rather than long-term memory span are the results of viewer inability to distinguish in pictures those elements that constitute their figures from those which identify their backgrounds.

In regards to message retention, for example, Rothkopf, Dixon, and Billington (1986, pp. 55-69) have shown that by augmenting and clearly revealing the spatial or environmental context of television pictures viewer's message retention greatly improves. Smith, Glenberg, and Bjork, (1978, pp. 460-471), have found that impoverished spatial context results in insufficient

learning and poor memory and concluded that viewers retained information better when the spatial context--the background--was undisturbed. Gunter (1980) tested the memory span of television news viewers by utilizing the background of the pictures and found that "...news item recall can be effected by picture content..." (p. 127) and stressed the importance of background visual information in memory and recall of visual messages.

As far as comprehension and clear understanding of visual displays in general is concerned, Mearers (1980) tested the figure/ground brightness contrast and reading disabilities in children and found that the degree of comprehension and understanding of reading greatly depends on the "...conventional figure/ground organization books, i.e., black print on a white page" (p. 13). These findings suggest that any discrepancy or uncertainty in the figure/ground brightness contrast will result in confusion and misunderstanding of the written message. Welch and Watt (1982, pp. 133145) studied the degree of learning of pre-schoolers, which is seemingly related to comprehending and understanding, by using complex visual stimuli and found that visual attention and visual complexity are not isomorphic. They concluded that low to moderate levels of activity will enhance visual attention (Welch & Watt, 1982, p. 144).

The purpose of this diagnostic study was to address the question of whether or not figure/ground anomalies in still advertising pictures and television commercials effect viewers' total comprehension and retention of such images. Pictures containing figure/ground anomalies were defined as those still or moving images in which the aesthetic principle of

figure/ground unity, as described in the review of literature, was violated thus producing unclear, unbalanced, incohesive, and confusing pictures. Since all of the pictures contain some information and give some degree of understanding of the event or object they depict, total comprehension was defined as the unquestionable and complete understanding of the content, both visual and auditory. Retention of visual messages was defined as the normal time required by the viewer to store the picture in his/her memory and then to retrieve and readily describe it.

The following research questions were set forth to be examined:

1. Viewers' total comprehension of still and moving images is differentially effected by the lack of clearly distinguishable figure/ground relationships.

2. Viewers' retention of still and moving images is differentially effected by the lack of clearly distinguishable figure/ground relationships.

It was expected that viewers' comprehension and retention of the visuals presented with the figure/ground anomalies would be diminished significantly.

Method

Stimulus Materials and Subjects

A total of ten pictures were selected from books referring to figure/ground relationships and also from various popular magazines and they were made into slides. Half of the slides were in color and the other half were black and white. All of the slides presented various discrepancies in the perceptual and the compositional unity of the figure/ground relationships.

In addition, two popular television commercials were selected for the tests, both of which contained various disorders in their figure/ground unity in order to shock or instantly attract viewer attention. The first was a 15-second Certs Breath Mint commercial which shows a futuristic, animated factory with a huge cylindrical machine in its center and animated miniature workers running aimlessly around. The second commercial was a 30-second ad of Alpha Romeo's new car called the Milano. The opening shot is of a parking lot with thousands of cars in long rows. It then dissolves into a shot which shows the bottom of the cars in the parking lot becoming the roof, or sky, from which the new car is lowered into a warehouse and then goes to a pseudo-environment with long road lights and power poles through which the car starts to move.

Aided by additional visual and auditory factors such as unexpected cuts, strange narration describing the action, and peculiar sounds, these fast-paced commercials were successful in apprehending the viewer and demanding instant attention to the visuals.

A total of 122 students from various university classes, evenly divided between men and women, were randomly selected to take the test.

Measures

Research in the fields of perceptual, experimental, and cognitive psychology as well as in visual communication has suggested that the memory of events involving visual stimuli are initially structured in the peripheral domain of the viewers (Brown, 1976; Mandler & Parker, 1976; Mandler, Seegmiller, & Day, 1976; Gibson, 1979; Jacoby & Craik, 1979; Kipper, 1983).

According to Kipper (1983):

> The physical details of a scene are filled-in or "described" to the degree allowed by the observer's mental set and by the conditions of observation. When the observer later attempts to recall the event the quality of the initial description determines how well the event can be discriminated from other similar events (p. 300).

Both variables, the description of the visuals (their comprehension and and clear understanding) and their retention (the viewer's normal memory of them), were measured by two different measuring devices developed for this experiment. The first measurement consisted of a questionnaire of ten questions, one for each of the slides. Each question provided five choices with values ranging from five points (highest) to one point (lowest). This measurement was developed to gather data pertinent to the still pictures. The questions were equally divided between the variables comprehension (questions 1, 4, 5, 6, 7) and retention (questions 2, 3, 8, 9, 10). (A sample of the first test is in Appendix A).

The second measurement also consisted of a multiple-choice questionnaire of eight questions based on the two television commercials described earlier. This measure was developed to gather data referring to television images. The questions were divided between the variables comprehension (questions 1, 4, 6, 7), and retention (questions 2, 3, 5, 8). (A sample of the second test is in Appendix B).

Procedures

Since the viewing conditions and the experimental setting are crucial

factors in the process of visual communication, an effort was made (a) to have the subjects sit approximately the same distance (8-10 feet) from the slide and television screens and (b) a small number of subjects (8-10 students) were tested each time.

Subjects of the first test were shown the slides in 15-second intervals allowing five seconds to see each slide and 10 seconds to register their responses. After the first test was over the subjects were instructed to carefully observe the two video commercials and to register their responses.

Analysis and Results

The purpose of this exploratory study was to diagnose the extent to which still pictures or television images, lacking proper figure/ground relationships in their composition, are easily comprehended and recalled by viewers. It was hypothesized that viewers' total comprehension and retention would be significantly effected by the lack of clearly distinguishable figure/ground relationships in specially selected still and moving images. (Table 1 shows the sum-total of the responses to each variable).

Since this was only an exploratory study lacking the customary control group, the statistic used was a simple calculation of the sum-total of all scores ($\sum_{i=1}^{N} xi$ or $\sum x$ where N=122) for the factors comprehension and recall. The preliminary analysis was based on the percentage (%) of the average scores of each question.

Insert Table 1 about here

Total Responses of the Factors Comprehension and Retention

First Test (Slide Visuals)			Second Test (TV Commercials)		
Comprehension	Total	% Correct (610)	Comprehension	Total	% Correct (610)
Question 1	568	.92	Question 1	307	.50
Question 4	331	.54	Question 4	319	.52
Question 5	210	.34	Question 6	355	.58
Question 6	498	.81	Question 7	228	.46
Question 7	342	.56			
Total		.63	Total		.51
Retention			Retention		
Question 2	283	.46	Question 2	311	.50
Question 3	510	.83	Question 3	366	.60
Question 8	480	.78	Question 5	232	.38
Question 9	502	.82	Question 8	341	.55
Question 10	527	.86			
Total		.73	Total		.50

The first slide, depicting a man sitting on a chair in front of a black background, was not understood or comprehended by the subjects. Ninety-two percent of the subjects responded that they did not understand the content of the picture. Slide #4 was Marc Chagall's painting titled "I and the Village," in which the figures become backgrounds and vice-versa, producing a complex and dynamic synthesis of figures within grounds requiring intensive observation and study of the details. Only 54% of the subjects were able to identify the actual background of the picture correctly. Slide #5 was a picture of a Dalmatian dog which blended totally with the black and white spots of the environment making its identification at first glance very difficult. Only 64% of the test subjects were able to identify the visual synthesis of the picture. Slide #6 shows a model standing in front of the apex of two white walls (five points). Subjects were asked to describe the background and although the degree of correct answers seems fairly high at 81%, most of the subjects chose one white wall (four points) which was the second best answer. The understanding of the important elements in slide #7 was an average 56% indicating that neither the over-all shape nor the colors of the picture were clearly comprehended by the viewers. The over-all degree of comprehension of the five slides was only 63% which suggests that comprehension of still pictures with figure/ground anomalies is fairly minimal.

The retention of slide #2 advertising the drink Tia Maria in the foreground and showing a woman's face in an exotic setting in its background was a fairly weak 46% since the subjects mainly remembered the colors or

the woman's face in the background. The subjects' memory of the faces in slide #3 was fairly clear at 83% regardless of the confusion of their appearance. Recall of the visual elements of slide #8 depicting a large brown bear as the ground on which other bears, a helicopter, and two people are shown, was 78%--not particularly strong. Slide #9 which shows a picture within a picture--a house inside a bottle of liqueur--was fairly easily remembered by the subjects (82%). Slide #10 showing a drawing of a dog with only black and white areas was easily retained. The over-all degree of retention of the five slides was only 73% which suggests that retention of these still pictures with obvious figure/ground anomalies was somewhat effected.

The results of the second test--the television commercials--were significantly lower as shown in Table 1. The over-all degree of comprehension measured with questions #1 (50%), #4 (52%), #6 (58%), and #7 (46%) was very low (51%). In question #1 the subjects expressed difficulty in understanding the direction of the movements of the people in the background. In question #4 the subjects had great difficulty comprehending the action which took place in the background of the Certs commercial. In question #6, when subjects were asked to identify the activity in the Certs commercial, there seemed to be great confusion. Lastly, in question #7, the responses suggest that the visual materials used in the Alpha Romeo commercial were little understood.

The overall degree of viewer's retention as tested with questions #2 (50%), #3 (60%), #5 (38%), and #8 (55%) was only 50%, which is substantially

low. In question #2 the background did not seem to attract the attention of the subjects as one might have expected. In question #3 the ranking of the visual elements in the Certs commercial in terms of their importance was not cohesive. The approximate number of telephone or light poles along the road in the Alpha Romeo commercial in question #5 was very poorly identified. Lastly, in question #8, the subjects performed poorly in their effort to recall the background from which the Alpha Romeo Milano was lowered.

Discussions and Conclusions

Due to the lack of a control group, vigorous statistical treatment was not deemed necessary since this is an exploratory study intending to diagnose the consequences of figure/ground anomalies in viewer comprehension and recall.

The overall results seem to support the hypotheses that anomalies in the figure/ground relationship in still and moving images might attract viewers' instant attention but they are not completely comprehended or easily remembered. Consequently, the overall effectiveness of the visual communication process does not seem to be all that successful.

The suggestion by scholars such as Cerulo (1988) "...that disrupting conventional relationships among the elements of communication can actually enhance clarity and effectiveness" (p. 94) does not seem to be true. In fact, the review of literature and the preliminary findings of this study seem to suggest just the opposite. Further investigation and repeated tests on this issue are necessary.

There are a series of drawbacks also diagnosed by this study which should

guide future researchers. First, the construction or the selection of visual stimuli in both still pictures and moving images, with an obvious lack of figure/ground harmony and clear distinction, must be made with a control group in mind. Second, the application of measuring devices utilizing the paper and pencil technique of data gathering is not such a reliable design for the study of visual communication related variables. More advanced, precise, and unbiased measuring devices such as the known psychophysiological instruments EEG, EKG, EMG, GSR, Eye-Tracking Camera, or pupilometer should be employed (Metallinos, 1987). Third, the subjects' long-term exposure to and familiarity with commercial pictures--still and moving pictures--must be firmly controlled if the results are to be valid. Lastly, the constructs comprehension and retention are unique, separate, and distinct human processes when each is found alone. As such, they are found in different parts of the human brain. However, where they are both present and they are measured in the same study, the interaction and intervention of one with the other is significantly enhanced. Measuring devices that will compensate for such interactions as retention, due to the clear understanding of visual displays, are warranted.

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Appendix A

First Test

Slides

Appendix B

Second Test

Television Commercials

First Test

Instructions

Listed below are a series of statements and questions referring to the slides you will see. Each statement and each question represents an opinion, your opinion. We are interested in finding out the extent to which you agree or disagree with each question or statement.

Usually, first impressions are the best in such cases, but your point of reference should always be the slides you will see. Read each question and each statement very carefully. Decide on your answer and check the appropriate appropriate response listed below each question.

Since time is a factor which might bias the study, please comply with the time restrictions determined by the study.

Thank you for your cooperation.

1. To what degree do you feel you understood the content of this picture

__1__ Very well

__2__ Well

__3__ Adequately

__4__ Somewhat adequately

__5__ Not at all.

2. What attracted your attention the most in this picture?

__1__ The colors

__2__ The face in the background

__3__ The figures in the foreground

__4__ The lettering in the picture

__5__ The glass with the drink.

3. What are the five most important visual elements in this picture? (Please complete in terms of importance).

__5__ Faces

__4__ Black and white areas

__3__ Facial expressions

__2__ Overlapping pictures

__1__ Other.

4. Which, in your opinion, is the real background of this picture?

__2__ The little house on the top left side

__3__ The house in the bottom center

__5__ The head on the left side

__1__ The cow's head on the left side

__4__ The circle in the center.

5.To what degree do you understand the visual synthesis of this picture?

__1__ Very well

__2__ Well

__3__ Adequately

__4__ Somewhat adequately

__5__ Not at all.

6. Was this picture taken in front of:

__4__ A white wall?

__1__ A mirror?

__5__ Two white walls?

__3__ A white sheet?

__2__ None of the above.

7. What strikes you as the most important element in this picture?

__5__ The shape of the picture

__4__ The colors of the picture

__3__ The entire synthesis of the picture

__2__ The symbolism of the picture

__1__ None of the above.

8. List the elements existing in this picture in terms of importance?

__5__ Big bear

__4__ Two smaller bears

__3__ A helicopter

__2__ Two men

__1__ Other

9. Describe, in order of importance, what you saw in this picture.

__5__ Bottle of whiskey

__4__ The house within the bottle

__3__ Snow and lights

__2__ Trees and snowman

__1__ Other

10. How many black spots are there in this picture?

__4__ More than 10

5 More than 15

2 Less than 10

3 Less than 15

1 Do not remember.

Second Test

Instructions

Listed below are a series of statements and questions referring to the videotape you will see. Each statement and each question represents an opinion--your opinion. We are interested in finding out the extent to which you agree or disagree with each question or statement.

Usually first impressions are the best in such cases but your point of reference should always be the video you will see. Read each question and each statement very carefully. Decide on your answer and check the appropriate response listed below each question. Since time is a factor which might bias bias the study, please comply with the time restrictions determined by the study.

Thank you for your cooperation.

1. The people in the Certs commercial were going upwards towards the center of the picture.

__1__ Strongly agree

__2__ Agree

__3__ Neutral

__4__ Disagree

__5__ Strongly disagree.

2. Your attention was drawn by the background of the pictures.

__1__ Strongly agree

__2__ Agree

__3__ Undecided

__4__ Disagree

__5__ Strongly disagree.

3. Please list, in order of importance to you, at least five other elements visible in the Certs commercial.

__5__ Bottle of whiskey

__4__ Factory-type environment

__3__ Snow and lights

__2__ The colors of the picture

__1__ Other

4. Please indicate what you understood best in the Certs commercial.

__4__ The environment of the event

__3__ Certs importance on our health

__2__ The making of Certs

__5__ Certs' destruction by pressure

__1__ None of the above

5. How many telephone or light poles are shown along the road in the Alpha Romeo commercial?

__3__ Less than three

__5__ More than five

__1__ Do not remember

__4__ Only four

__2__ More than two.

6. Please indicate the degree to which you understood what the people in the Certs commercial were occupied with.

__3__ About 50%

__1__ About 10%

__4__ More than 60%

__2__ Less than 50%

__5__ About 100%.

7. The visual materials used in the Alpha Romeo commercial were clearly understood.

__1__ Strongly agree

__2__ Agree

__3__ Neutral

__4__ Disagree

__5__ Strongly disagree.

8. The car in the Alpha Romeo commercial fell from the roof of a huge warehouse.

__5__ Strongly agree

__4__ Agree

__3__ Neutral

__2__ Disagree

__1__ Strongly disagree.